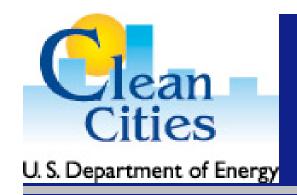


# Brief overview of context in today's discussion

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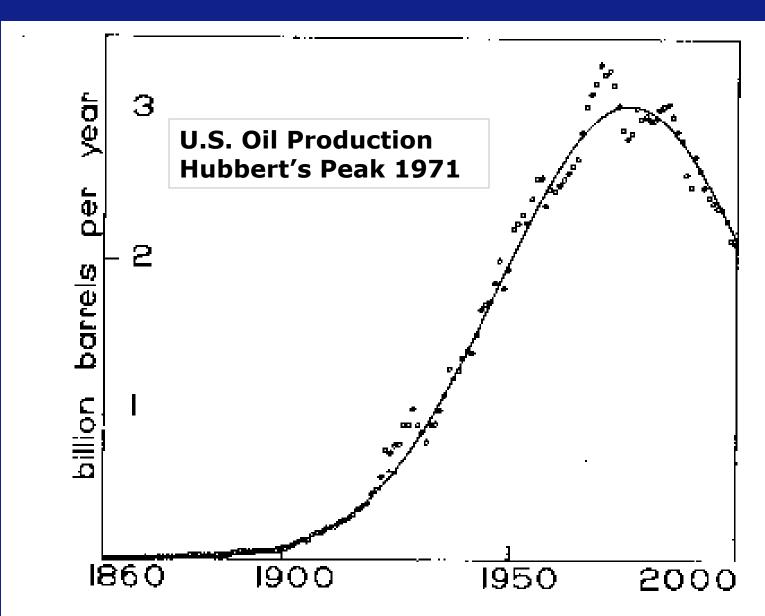
History/Benefits of Biodiesel



# Colorado Springs Clean Cities

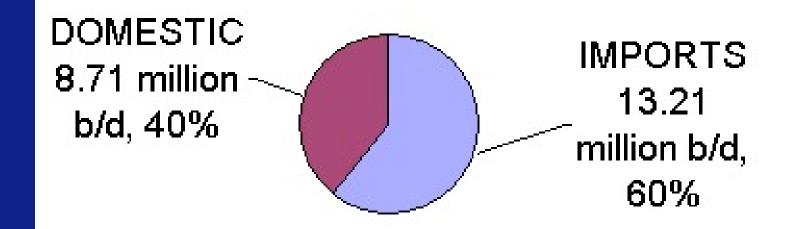
 The United States of America is the world's largest energy producer, consumer, and net importer.

 It also ranks eleventh worldwide in reserves of oil, sixth in natural gas, and first in coal



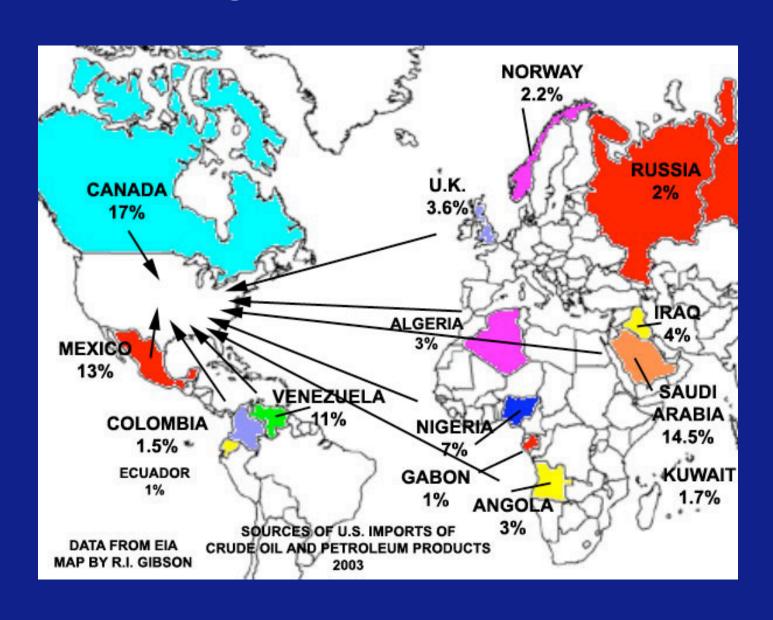
Annual production of U.S. crude oil (circles) with the best-fitting Gaussian curve superimposed as a solid line. Production from Alaska and from offshore oil fields is included.

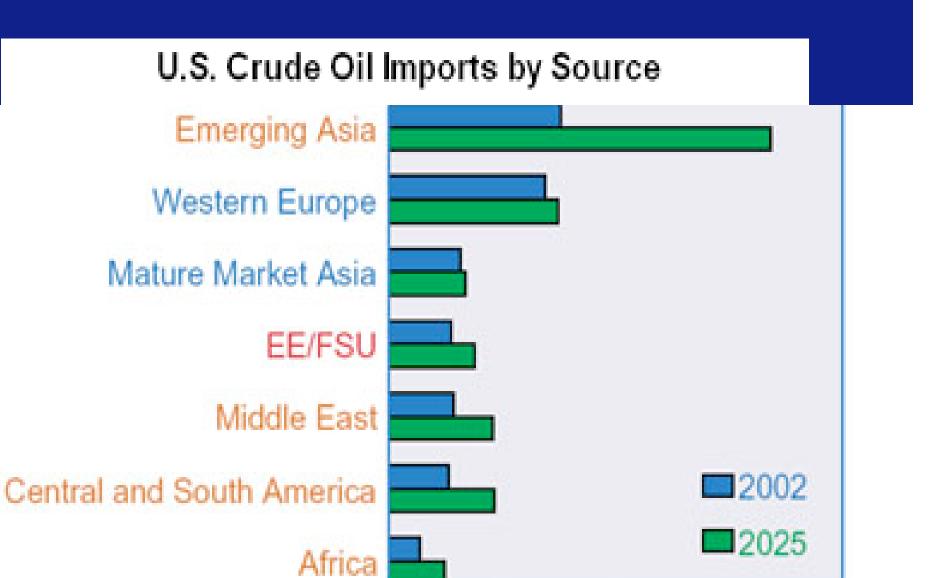
# US Oil Consumption, 2005 Total: 21,930,000 barrels per day



Leading Oil Consumers	Leading Oil Importers	Leading sources of US imports
USA (20 million barrels per day) China (5.6) Japan (5.5) Germany	USA (11.1 million b/d) Japan (5.3) Germany (2.5) South Korea (2.2)	Canada (17%) Saudi Arabia (14.5%) Mexico

### Where U.S. gets its oil

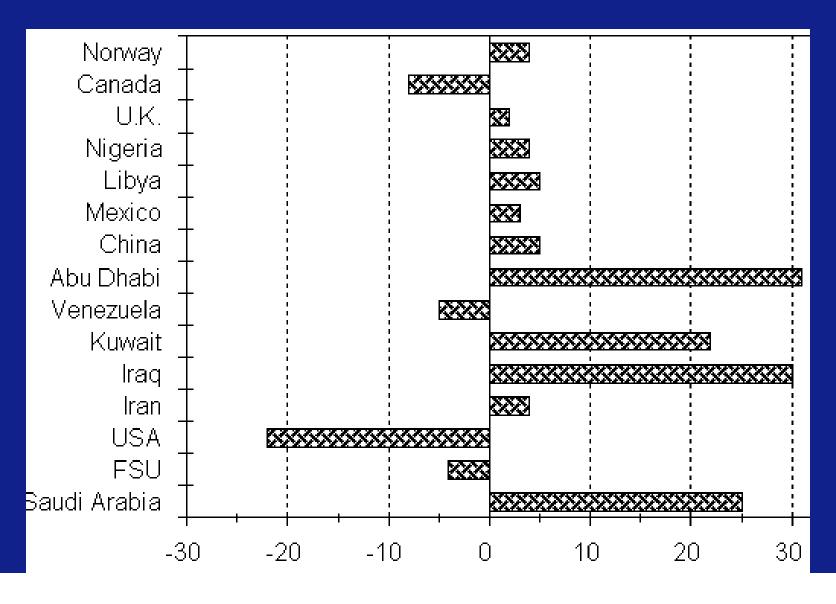




Million Barrels per Day

## Time to Depletion Mid Point (December 2003)

Source www.HubbertPeak.com



### **Historical World Oil Discovery and Production**

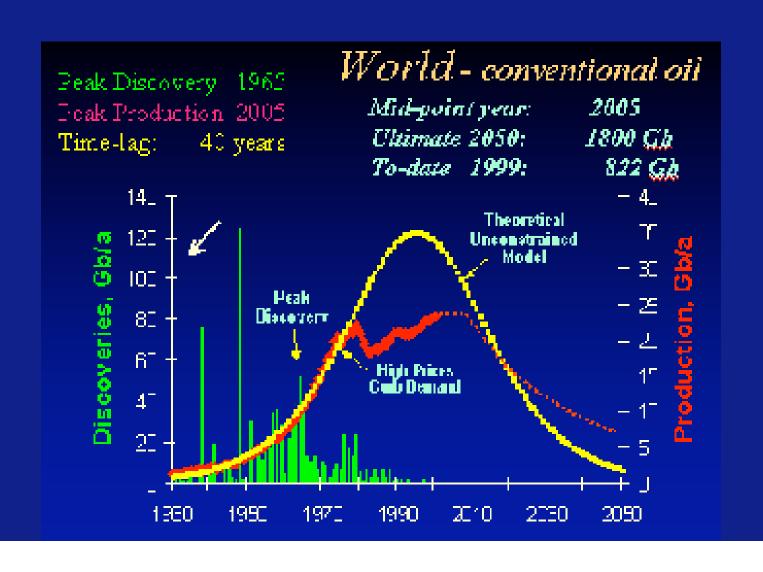


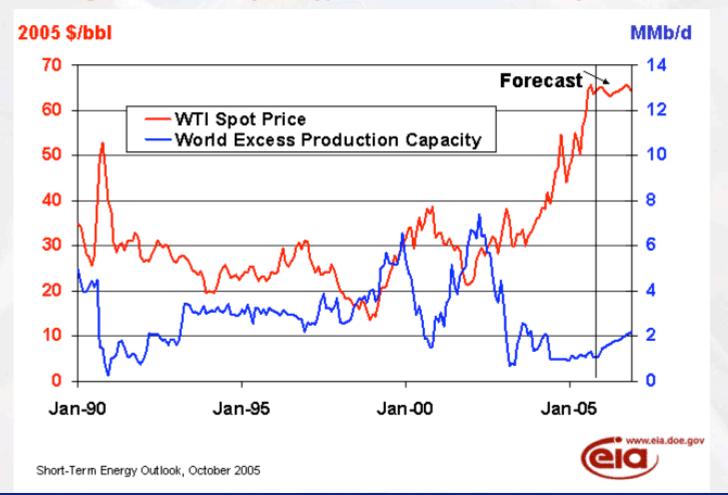
Table 1: Selected Reported Reserves (Gb) with Suspect Increases

Year	Abu Dhabi	Dubai	Iran	Iraq	Kuwait	Saudi Arabia*	Venezuela	Spurious Amount
1980	28.00	1.40	58.00	31.00	65.40	163.35	17.87	0
1981	29.00	1.40	57.50	30.00	65.90	165.00	17.95	0
1982	30.60	1.27	57.00	29.70	64.48	164.60	20.30	0
1983	30.51	1.44	55.31	41.00?	64.23	162.40	21.50	11.3
1984	30.40	1.44	51.00	43.00	63.90	166.00	24.85	0
1985	30.50	1.44	48.50	44.50	90.00?	169.00	25.85	26.1
1986	31.00	1.40	47.88	44.11	89.77	168.80	25.59	0
1987	31.00	1.35	48.80	47.10	91.92	166.57	25.00	0
1988	92.21?	4.00?	92.85?	100.00?	91.92	166.98	56.30?	192.11
1989	92.21	4.00	92.85	100.00	91.92	169.97	58.08	0
1990	92.00	4.00	93.00	100.00	95.00	258.00??	59.00	88.3

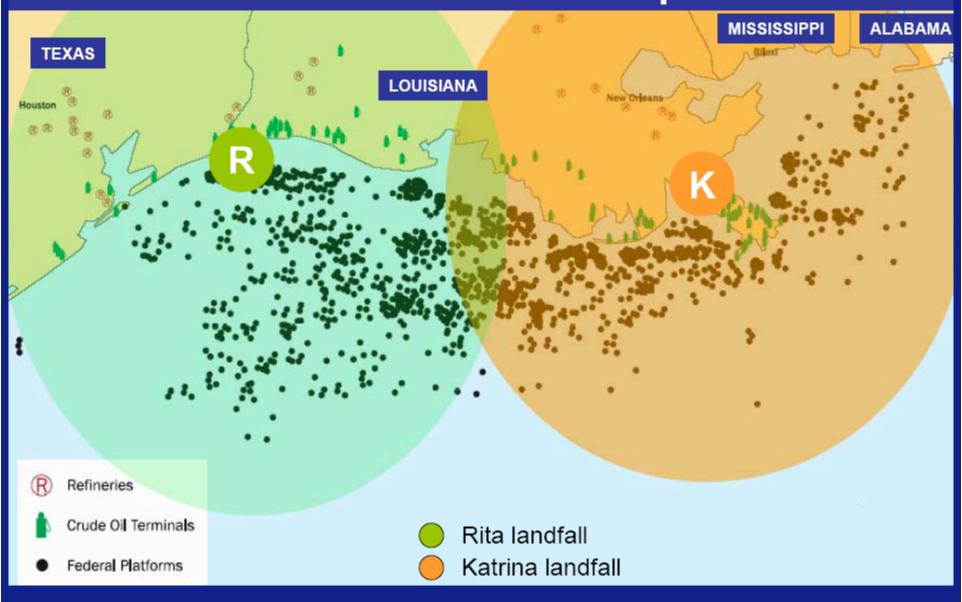
TOTALS: Declared Reserves for above Nations (1990) = **701.00 Gb** - Spurious Claims = **317.54 Gb** 

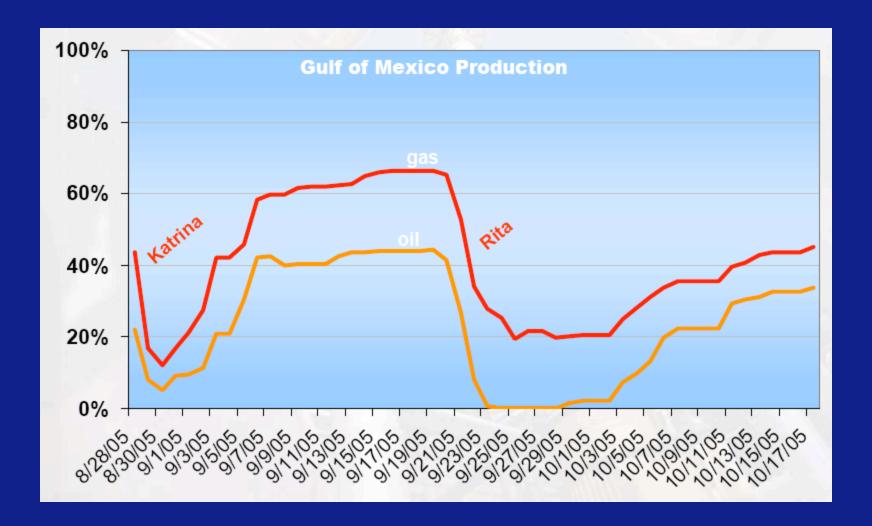
### EIA estimates of world oil spare production capacity

Spare global capacity (amount of extra oil that can be brought to market quickly) at lowest level in 30 years



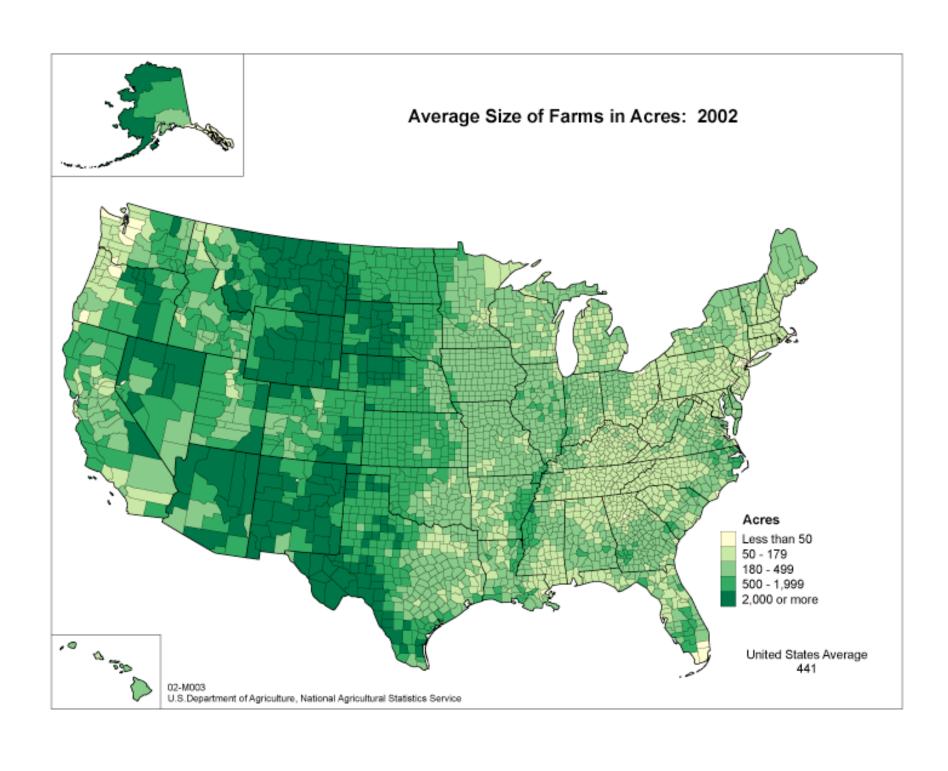
# Hurricanes Rita, Katrina And Gulf Oil & Natural Gas Operations

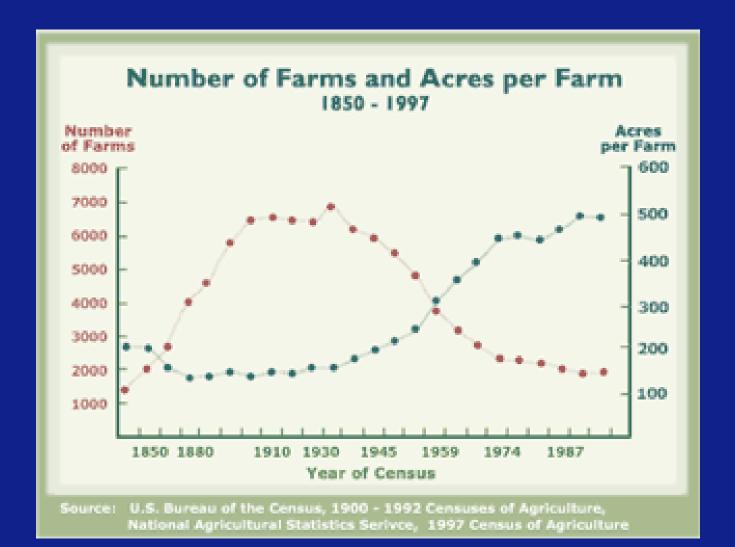


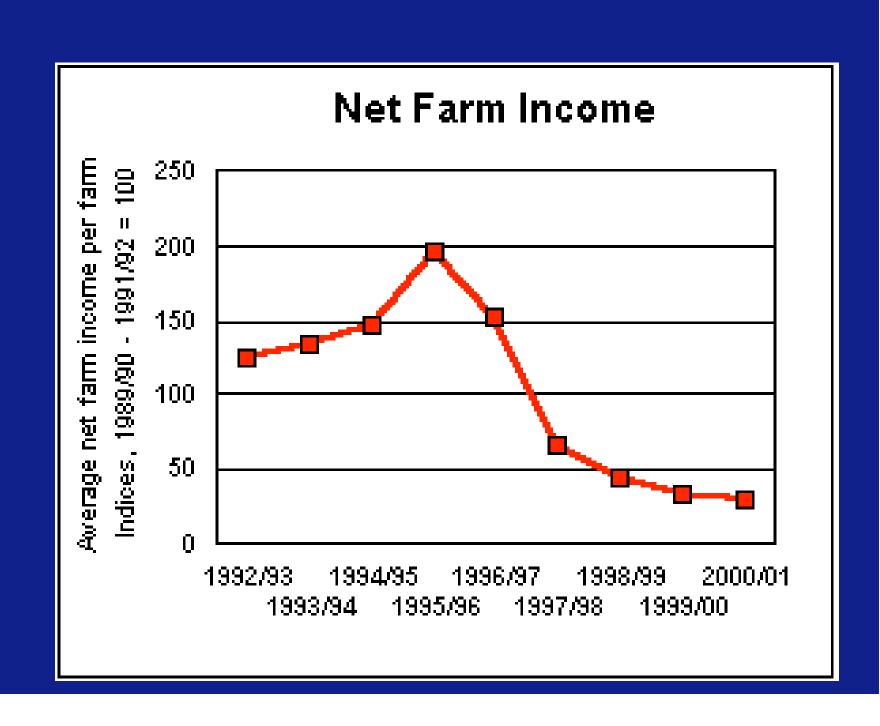


# American Farms











# Domestically Produced Biodiesel





"The use of vegetable oils for engine fuels may seem insignificant today, but such oils may become, in the course of time, as important as petroleum and the coal-tar products of the present"

Rudolf Diesel, inventor of the diesel engine, on April 13, 1912





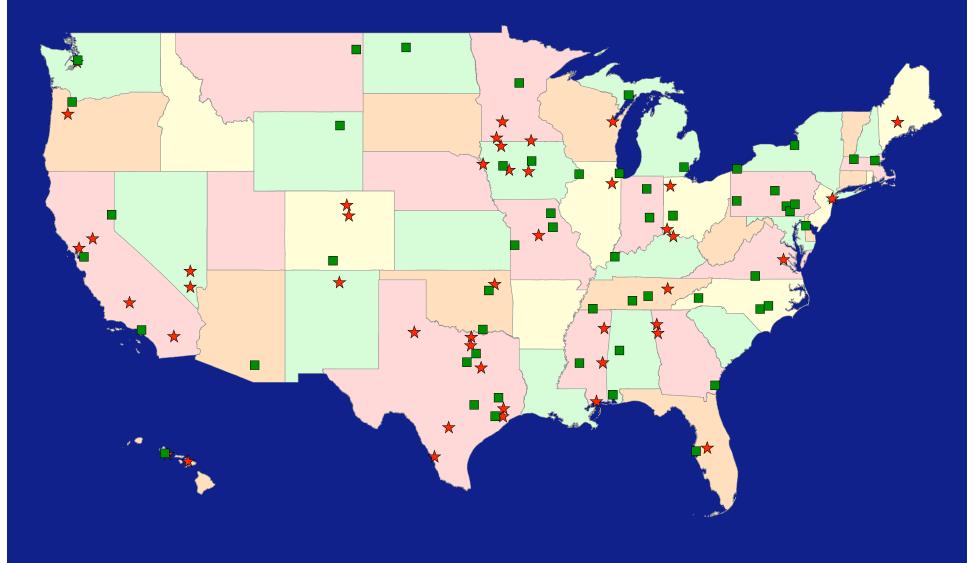
### **Production of Biodiesel**

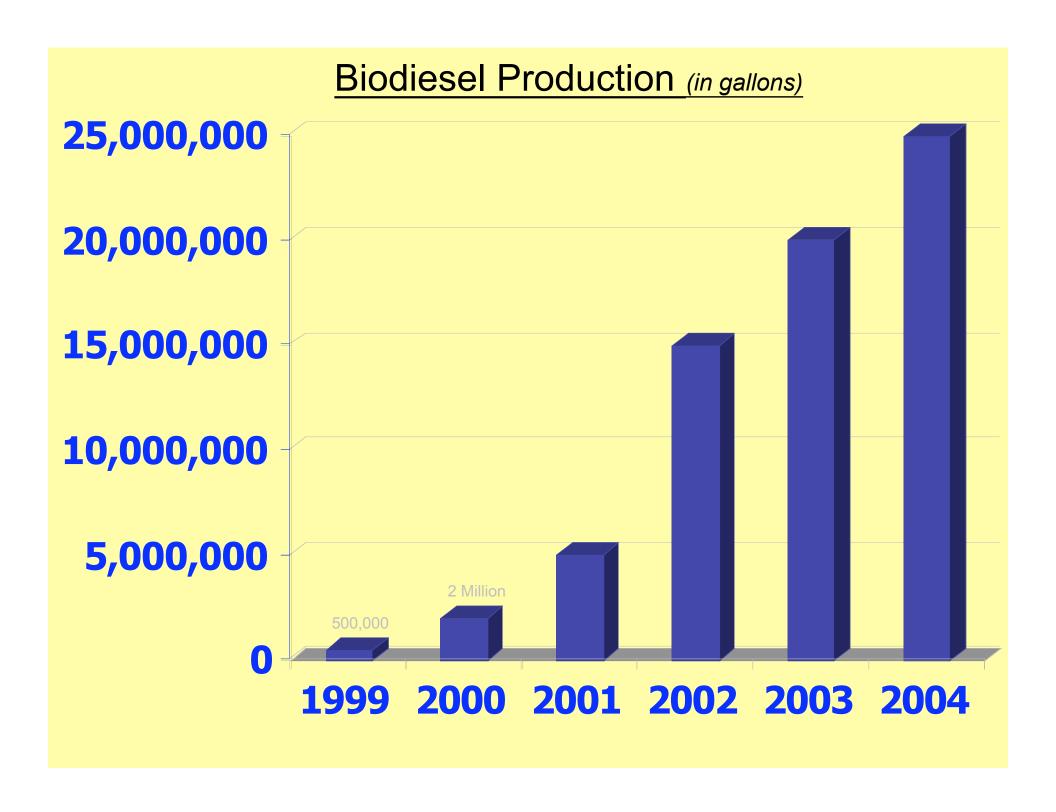


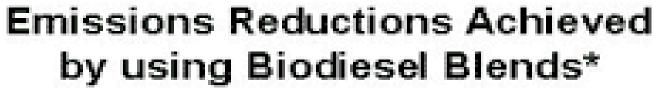


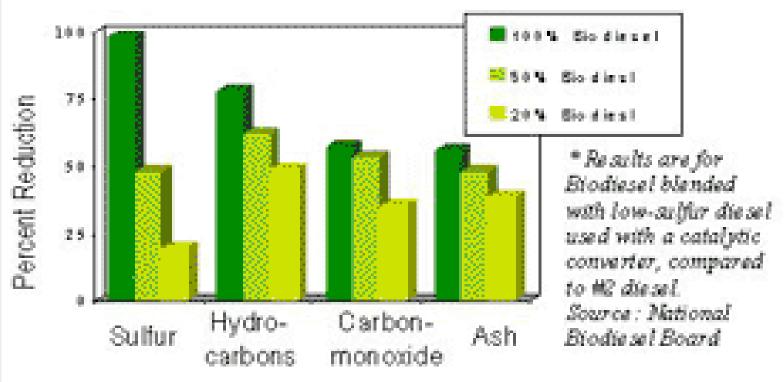


# Active and Proposed Biodiesel Plants









### BIUDIESEL REDUCES HARMFUL EMISSIONS

EMISSION TYPE	100% BIODIESEL	20% Biodiesel
Carbon Monoxide	-43.2%	-12.6%
Hydrocarbons	-56.3%	-11.0%
Particulates	-55.4%	-18.0%
Nitrogen Oxides(NOx)	+5.8%	+1.2%
Air Toxics	-60% to -90%	-12% to -20%
Mutagenicity	-80% to -90%	-20%
Carbon Dioxide *	-78.3 %	-15.7%

Source: National Renewable Energy Laboratory (NREL)

# **Biodiesel Credit Extension**

- Passed in Energy Bill
  - Through 2008 v. 2006
- Federal Excise Tax Credit
  - Taken at producer or blender level
- 50 cent credit for each gallon of biodiesel blended into diesel fuel
- \$1 for "agri-biodiesel"
  - First use veg oils and fats



# Estimated \$0.17 Bushel increase in the price of soy.

# One bushel of soy produces 1 gallon of gas

Energy ratio approximately 1 to 3



# Fuel blends

Blending relatively low levels of alternative fuels with conventional fuels is an important option for reducing petroleum use and an important strategy to reducing energy independence.

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Examples of blends include
E10 (10% ethanol/90% gasoline),
B5 (5% biodiesel/95% diesel),
B2 (2% biodiesel/98% diesel).
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Blends can also consist of two types of alternative fuels, such as hydrogen and compressed natural gas (HCNG), which might be a combination of 20% hydrogen and 80% CNG, for example

# Number of Alternative Fuel Stations in Colorado and U.S

Colorado	CNG	E85	LPG	ELEC	BioD	HY
	21	11	72	4	22	0
U.S.	787	436	2,995	588	304	14

